

REMARKS

I. Summary of the Examiner's Action

A. Claim Rejections

As set forth in paragraph 3 of the August 21 Office Action, claims 1 – 15 stand rejected under 35 U.S.C. § 101 as being directed non-statutory subject matter.

As set forth in paragraph 4 of the August 21 Office Action, claims 1, 3, 8, 10 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over “A Neural Network Modelling Methodology for the Detection of High-Risk Programs” by Khoshgoftaar *et al.* (hereinafter referred to as the “Khoshgoftaar1 reference”) in view of “Application of Neural Networks to Software Quality Modeling of a Very Large Telecommunications System” by Khoshgoftaar *et al.* (hereinafter referred to as the “Khoshgoftaar2 reference”).

As set forth in paragraph 5 of the August 21 Office Action, claims 2, 4 – 7, 9 and 11 – 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Khoshgoftaar1 and Khoshgoftaar2 references as applied to claims 1, 3, 8, 10 and 15 and further in view of “Self Organizing Maps as a Tool for Software Analysis” by Pedrycz *et al.* (hereinafter referred to as the “Pedrycz reference”).

II. Applicant's Response – Claim Rejections

A. Rejection of Claims 1 – 15 under 35 U.S.C. § 101

Applicant has amended the independent claims to recite a substantial practical application. For example, claim 1 now recites “presenting the type of said at least one data structure as data indicating a degree of risk of said at least one data structure.” In view of these amendments, Applicant respectfully submits that the rejection is now moot.

B. Rejection of Claims 1, 3, 8, 10 and 15 under 35 U.S.C. § 103(a)

The Khoshgoftaar1 reference discloses a solution in which a feed-forward neural network is used for computing a classifier for a computer program module. The classifier identifies the program module as being either a high-risk module or a low-risk module. The input vector to the neural network is a set of numbers that indicates a degree of complexity of the program module, e.g. number of different operators, number of lines of code, etc.

The Khoshgoftaar1 reference does not teach to compare input vectors with vectors of neurons, said vectors of neurons representing elements of an input data space, as recited in the independent claims of the present application.

In the solution disclosed by the Khoshgoftaar1 reference a vector associated with each neuron is a vector of interconnection strengths between said neuron and its neighboring neurons. In the solution of the Khoshgoftaar1 reference an outcome of the

neural network is not formed by comparing the input vectors of the neural network (i.e. sets of numbers that indicate a degree of complexity of a program module) with the vectors of interconnection strengths between adjacent neurons. The interconnection strengths are coefficients of multiplications that are performed for calculating the outcome of the neural network (according to the equations in the left column in page 304 of the Khoshgoftaar1 reference).

The Khoshgoftaar1 reference does not teach to provide each neuron with a vector that represents elements of an input data space as recited in the independent claims of the present application.

The Khoshgoftaar2 reference discloses a solution in which a feed-forward multilayer perception network is used for identifying fault-prone program modules. The network comprises computational processing units each of them having a number of inputs, an activation function, and one output. The units are arranged in layers: one layer of units is disposed to receive input values of the network, one layer of units is disposed to give output values of the network, and between these layers one or more hidden layers of units. The output layer has two units: one unit for the class “not fault-prone” and one unit for the class “fault-prone”. Therefore, at least one unit (i.e. neuron) has associated information (a label) indicating a type of said unit (neuron).

The Khoshgoftaar2 reference does not teach to compare input vectors with vectors of neurons, said vectors of neurons representing elements of an input data space, as recited in the independent claims of the present application.

The Khoshgoftaar2 reference teaches that the unit of the output layer that has the greatest (i.e. greater from two values) value determines a result of classification. This means that one has to compare the outputs of the two units in the output layer in order to find out which one is the greater one. Comparing output values of two units with each other is not the same thing as comparing input vectors with vectors of neurons, said vectors of neurons representing elements of an input data space.

The Khoshgoftaar2 reference does not teach to provide each unit (neuron) with a vector that represents elements of an input data space as recited in the independent claims of the present application.

Accordingly, Applicant respectfully submits that independent claims 1, 8 and 15 are patentable over the Khoshgoftaar1 and Khoshgoftaar2 references, whether taken singly or in combination. Applicant therefore respectfully requests that the Examiner withdraw the rejection of claims 1, 8 and 15. Applicant respectfully submits that claims 3 and 10 are patentable both as depending from allowable base claims and for reasons attributable to their independently-recited features. Applicant therefore respectfully requests that the rejection of claims 3 and 10 be withdrawn as well.

C. Rejection of Claims 2, 4 – 7, 9 and 11 - 14 under 35 U.S.C. § 103(a)

Applicant respectfully submits that it is not seen where the Pedrycz reference remedies the deficiencies of the Khoshgoftaar1 and Khoshgoftaar2 references. As claims 2, 4 – 7, 9 and 11 – 14 depend either directly or indirectly from independent claims that were distinguished over the combination of the Khoshgoftaar1 and Khoshgoftaar2 references, Applicant respectfully submits that claims 2, 4 – 7, 9 and 11 – 14 are likewise patentable. Applicant therefore respectfully requests that the rejection of claims 2, 4 – 7, 9 and 11 – 14 be withdrawn as well.

III. Conclusion

The Applicant submits that in light of the foregoing remarks the application is now in condition for allowance. Applicant therefore respectfully requests that the outstanding rejections be withdrawn and that the case be passed to issuance.

Respectfully submitted,

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Date

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